CLAIMS

1. A machine for processing sheets for the production of packagings in materials such as cardboard or plastic, comprising driving means (14, 16, 18) capable of driving sheets in a drive direction (F) at a substantially constant drive speed (V) through a processing zone (T) situated between the entrance (E) and the exit (S) of the machine and processing means comprising a tooling (53, 53') and a counter-tooling (56; 156; 256; 356; 456) respectively borne by a first and by a second rotary support shaft (52, 54), which shafts extend transversely to the drive direction (F), being disposed opposite each other on either side of the path (P) of the sheets, said processing means being designed to produce in these sheets cutouts (22, 28) and/or folds (24) disposed transversely to the drive direction, the machine comprising means (UC) for operating the rotational drive of the support shafts (52, 54), which means are capable of operating the rotational drive of said support shafts so that, at least at the moment when the tooling (53, 53') and the counter-tooling (56; 156; 256; 356; 456) cooperate with a sheet in order to make in it the transverse cutouts or folds, the tooling is propelled with a processing speed, the tangential component (V52) of which is equal to said drive speed (L), and the counter-tooling is situated opposite this tooling, characterized in that the counter-tooling (56; 156; 256; 356; 456) has a substantially cylindrical surface having at least one working strip (57; 157; 257; 357; 457) which extends parallel to the axis of the second support shaft and is radially offset relative to the portions (58; 159; 359; 459) of said surface which are adjacent to this strip, said working strip being designed to cooperate with the tooling to form a cutout or a fold in a sheet, and in that the first and second support shafts (52, 54) are each driven by a motor (M52, M54), the motor of the second support shaft being operated as a slave to the motor of the first shaft.

2. The machine as claimed in claim 1, characterized in that the surface of the counter-tooling (56; 156; 256; 356; 456) has a plurality of working strips (57; 157; 257; 357; 457) spaced angularly apart.

3. The machine as claimed in claim 2, characterized in that the surface of the counter-tooling (56; 156; 256; 356; 456) has a regular alternation of projecting strips (57; 157; 257; 359; 457) and withdrawn strips (58; 159; 259; 357; 459).

4. The machine as claimed in any one of claims 1 to 3, characterized in that the width (Lc) of the or of each working strip (57; 157; 257; 357; 457) is greater than the width (Lo) of the tooling, though being approximate to this width.

5. The machine as claimed in claim 4, characterized in that the width of the or of each working strip (57; 157; 257; 357; 457) lies within the range 1.05 to 1.8 times the width of the tooling.

6. The machine as claimed in any one of claims 1 to 5, characterized in that the working strip (157; 257; 357; 457) is mounted detachably on the counter-tooling (56; 156; 256; 356; 456).

7. The machine as claimed in claim 6, characterized in that the surface of the counter-tooling (356; 456) is borne by a support plate (360; 460) on which are fixed at least two surface elements (359; 459), which define between them, by their mutually opposite axial edges (359A; 459A) provided with first holding surfaces (359'; 459'), a receptacle for the working strip (357; 457), the latter being capable of being inserted in said receptacle and

having, on its axial edges, second holding surfaces (357'; 457') capable of cooperating with said first holding surfaces.

8. The machine as claimed in claim 7, characterized in that the surface elements (359) are themselves fixed detachably on the support plate (360).

9. The machine as claimed in any one of claims 1 to 8, characterized in that it comprises means (C1, C2, C3) for determining information relating to the position of a sheet in the processing zone (T) and in that it comprises a control unit (UC) capable, as a function of the information relating to the position of a sheet in the processing zone, of operating the rotational drive of the first and second support shafts (52, 54) so that, for the processing of this sheet, the tooling (53, 53') is in contact with a predefined region of the sheet and is propelled with a processing speed, the tangential component (V52) of which is equal to said drive speed (V), whereas the working strip (57; 157; 257; 357; 457) is in contact with said defined region, but on the other side of the sheet relative to the tooling.

10. The machine as claimed in any one of claims 1 to 9, characterized in that the means (UC) for operating the rotational drive of the support shafts are capable of operating the rotational drive of said support shafts (52; 54) so that, at least at the moment when the tooling (53, 53') and the working strip (57; 157; 257; 357; 457) cooperate with a sheet for the processing of the latter, the tooling and the working strip are each propelled with a processing speed, the tangential component (V52, V54) of which is equal to said drive speed (V).

11. The machine as claimed in claim 9 and any one of claims 1 to 10, characterized in that the first support shaft (52) is a multi-tooled support shaft capable of bearing at least a

first and a second tool (53, 53') spaced angularly apart and in that the control unit (UC) is capable of operating the rotational drive of said multi-tooled support shaft according to a cycle comprising a processing phase performed by the first tool, in which said first tool (53) is in contact with a defined first region of a sheet situated in the processing zone (T) of the machine and is propelled with a tangential speed (V52) equal to the drive speed (V) of this sheet, a positioning phase, in the course of which the multi-tooled support shaft (52) is driven so as to place the second tool (53') in a position to process a defined second region of the sheet, and a processing phase performed by the second tool, in which the second tool (53') is in contact with said second region and is propelled with a tangential speed (V52) equal to the drive speed (V).

12. The machine as claimed in either one of claims 2 and 11, characterized in that the control unit (UC) is capable of operating the drive of the second support shaft (54) so that, in the course of a cycle, the first and the second tool (53, 53') of the first support shaft (52) cooperate with two separate working strips.

13. The machine as claimed in claim 2 and any one of claims 1 to 12, characterized in that it comprises means (UC) for operating the rotational drive of the support shafts, which means are capable of operating this drive so that, during the successive processing of a plurality of sheets, the tooling cooperates successively with different working strips.

Title: Machine For Processing Sheets With Cutouts or Folds Transverse to their Forward Moving Direction

Abstract: The invention concerns a machine comprising driving means (14, 16, 18) for driving sheets in a drive direction (F) through a processing zone (T), and processing means including a tool (53, 53') and a counter tool (56), respectively, borne by a first and by a second transverse rotary support shaft (52, 54). Said processing means are designed to produce in the sheets cutouts and folds transverse to their drive direction. The counter tool has a substantially cylindrical surface having at least one working strip (57) which extends parallel to the axis of the second support shaft and is radially offset relative to the portions (58) of said surface which are adjacent to said strip, the latter being designed to cooperate with the tool to form a cutout or a fold in a sheet.